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# Resolving ethical dilemmas: Exploring the role of moral principles

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**Defence R&D Canada**  
Technical Report  
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## Abstract

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We sought to answer two questions via this exploratory study. First, we investigated whether or not individual differences in moral principle selection/preference existed in response to six moral dilemmas. Second, we sought to find out whether they were related to the demographic variables of sex and age. As part of a larger study on moral decision making, 64 participants read and reflected upon six ethical dilemmas, rated the extent to which 5 moral principles influenced their decisions regarding these dilemmas, and selected their preferred courses of action in response to each dilemma. Results of multilevel analyses suggest that there was significant within- and between-subjects variability in the extent to which the participants relied on various moral principles to resolve the dilemmas. That is, clear individual differences existed in the moral principles that the participants reported had guided their moral responses to the dilemmas. We also found that different moral principles were invoked to differing extents depending on the domain of the decision (non-moral, military moral and non-military moral). Of the individual difference variables assessed here, results revealed that age was a significant predictor of moral principle preference, with older adults being more likely to use virtue- and care-based principles than did younger adults. Sex was not significantly associated with moral principle selection. We discuss the potential implications of individual differences in the use of moral principles and offer directions for future research in this area.

## Résumé

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La présente étude exploratoire visait à répondre à deux questions. En premier lieu, nous avons voulu savoir s'il existait des différences d'un individu à l'autre dans les préférences ou le choix de principes moraux utilisés dans la prise de décision face à six dilemmes moraux. En second lieu, nous nous sommes demandé dans quelle mesure, lorsque de telles différences existent entre les individus, celles-ci sont-elles liées aux variables démographiques que sont l'âge et le sexe. Dans le cadre d'une étude plus vaste portant sur le processus de prise de décision morale, 64 participants ont lu six dilemmes éthiques afin d'y réfléchir et d'évaluer dans quelle mesure cinq principes moraux influençaient leur décision face à ces dilemmes. Ils ont ensuite indiqué quelles étaient leurs lignes de conduite de prédilection face à chacun des dilemmes. Les résultats des analyses à niveaux multiples suggèrent qu'il existait des variations chez un même sujet et entre les sujets en ce qui a trait à l'importance qu'accordaient les participants à la portée des différents principes moraux pour résoudre ces dilemmes. Ce qui signifie qu'il existait des différences claires d'un individu à l'autre dans les principes moraux que les participants disaient avoir utilisés pour guider leur réponse morale à chacun des dilemmes. Nous avons également découvert que différents principes moraux ont été évoqués dans différentes mesures selon le domaine de décision (non lié à la morale, morale dans un contexte militaire et morale dans un contexte non militaire). Parmi les différences entre les individus évaluées ici, les résultats révèlent que l'âge était une importante variable explicative de la préférence au niveau des valeurs morales, les adultes plus âgés étant plus susceptibles de faire appel à des principes basés sur la vertu ou sur la sollicitude que ne le sont les adultes plus jeunes. Le sexe n'était pas associé de façon

significative au choix du principe moral utilisé. Nous discuterons des implications potentielles de ces différences individuelles dans l'utilisation de principes moraux et nous proposerons des directions pour les recherches à venir dans ce domaine.

## Executive summary

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### Resolving ethical dilemmas: Exploring the role of moral principles

Ann-Renée Blais; Megan Thompson; DRDC Toronto TR 2008-099; Defence R&D Canada – Toronto; August 2008.

**Background:** One feature considered to be an essential guide to the judgment and decision making process in the moral realm is the notion of *moral principle*. Moral principles are personal philosophies and provide individuals with “a framework within which individuals contemplate issues of right and wrong and assist individuals in determining what is the right way to behave” (Bass, Barnett & Brown, 1999, p. 186). They are assumed to guide normative standards of intention and action that are accepted by an individual or social group and are assumed to reflect core underlying values. They similarly guide evaluations concerning the motives and behaviors of others. Moral principles are thought to be so ingrained and so tied to our beliefs about ourselves as a members of a valued group that they will be almost inevitably primed during the moral decision making process and will thus guide moral behaviors as well. Moral principles also form the foundations of codes of professional conduct and honor as well as the basis of laws that are at the heart of the work of professional militaries, including international law and law of armed conflict. Within a military context as well, moral principles are also evident in honor codes that guide general behaviors and in rules of engagement drafted for individual military missions.

Past research supports the contention that there are individual differences in moral judgment and development, although the basis of these individual differences remains a subject of debate. More specifically, there is conflicting research concerning the importance of sex and of age as factors that might account for individual differences in moral judgments. Given their importance to moral and ethical decision making, and the continuing debate in the literature, we continue to investigate the factors that may be related to and may influence moral principle selection and use in making moral judgments. More specifically, the current exploratory research sought to answer two questions. First, we investigated whether individual differences in moral principle selection/preference exist in response to six moral dilemmas. Second, we asked, if individual differences do exist, to what extent are they related to the demographic variables of sex and age?

**Participants and Procedure:** As part of a larger study on moral decision making, participants were recruited for the study using flyers distributed across the Columbia University campus as well as the on-line recruiting system of the Center for the Decision Sciences, Columbia University. 64 participants read and reflected upon six ethical dilemmas that had been created for the study. Two decisions were non-moral in nature, two involved moral dilemmas based in the civilian world and the final two dilemmas were based upon incidents reported in a previous interview study of Canadian Forces (CF) military personnel who had encountered military ethical dilemmas during their military tours of duty (see Thomson, Adams, & Sartori, 2005). Each participant individually rated the extent to which five moral principles influenced their

decisions regarding these dilemmas, and selected their preferred courses of action in response to each dilemma.

**Results:** The results of the multi-level modeling analysis used suggest that there are indeed individual differences associated with moral principle preference. Our results showed that individual differences accounted for between 15 and 35% of the variance in moral principle selection, accounting for an average of 25% of the variance in moral principle selection across the six decisions explored in the current research. Moreover, multilevel modeling analyses also revealed some differences in moral preference selection based on the decision domain. Specifically, people reported invoking care- and consequences-based moral principles to a statistically significantly greater extent in making decisions that involved moral dimensions in both military and non-military than in decisions in the non-moral domain. Respondents also reported using self-Interest-based moral principles to a significantly greater extent in the non-moral and the moral non-military decisions than they did in the case of military moral decisions.

There were also significant differences in the extent to which our respondents reported using virtue- and rule-based moral principles across the three decision domains. Virtue- and rule-based moral principles were used to a greater extent when making military moral decisions than the non-military moral decisions, and were least likely to be used when making non-military non-moral decisions. Finally, our analyses revealed that the pattern of results with respect to moral principle choice was consistent across the two scenarios representing the military moral, the non-military moral and the non-moral choices, giving additional credence to the consistency of these results for the domain in question, rather than being idiosyncratic to the individual scenario.

The current results also indicated that these individual differences in moral principle selection are associated with age. Specifically, older respondents in this sample were significantly more likely to invoke care- and virtue-based moral principles in making their decisions in response to the moral dilemmas than were younger respondents.

**Discussion:** Our results corroborate those studies which found that individual differences exist in moral principle preference. They also replicate findings that demonstrated a positive correlation between age and differences in moral principle selection (e.g., Ruegger & King, 1992; Sankaran & Bui, 2003). However, the current research is not consistent with that of others, for instance, Dursun (2005) and Haviv and Leman (2002), who did not find evidence of age affecting a preference for a particular approach to moral judgment.

One reason for these differences between the current results and those of Dursun may lie in the nature of the samples, in that hers were all professionals associated with the Canadian Department of National Defence, while our sample may have been comprised of a mixed set of respondents, reflecting both university and community representation. With respect to the differing results of Haviv and Leman, it should be noted that our participants were responding to a set of moral dilemmas that had been generated by others, while Haviv and Leman had their participants provide examples of moral dilemmas from their own lives. It is not immediately clear exactly why 'other-generated' dilemmas might be associated with individual differences while self-generated dilemmas are not; it may lie in the nature or the consistency of the moral dilemmas that were used, or perhaps in terms of some level of personal involvement in the dilemma that is used as the stimulus. These are questions left to be addressed in future research.



**Military Relevance:** From the time military cadets or recruits enter military service they are taught elaborate codes of conduct and honor to which they are expected to adhere, and by which they are judged. Indeed, perhaps more than any other profession, codes of ethics are necessary for members of the armed forces, as many are called upon to make decisions concerning the life and death of its own members, its adversaries, and most unfortunately, also concerning civilian populations who may become collateral damage of military operations. Given the importance of ethics to the profession of arms, understanding the moral principles that are used to guide the decision making and behavior of its members, as well as the various influences on this process is essential. The current research adds to this important work begun by the Defence Ethics Program (DEP), by piloting and refining procedures for future empirical work exploring military moral scenarios that are relevant to CF operational missions.

# Sommaire

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## Resolving ethical dilemmas: Exploring the role of moral principles

**Ann-Renée Blais; Megan Thompson; DRDC Toronto TR 2008-099; R & D pour la défense Canada – Toronto; Août 2008.**

**Contexte :** Dans le domaine de la morale, on considère la notion de principe moral comme étant un guide essentiel au jugement et au processus de prise de décision. Les principes moraux sont des conceptions personnelles qui procurent à l'individu un « cadre à l'intérieur duquel les gens étudient les problèmes liés au bien et au mal, un cadre qui aide l'individu à déterminer quelle est la bonne façon d'agir » (Bass, Barnett & Brown, 1999, p. 186). Ces principes serviraient de cadre normatif d'intentions et d'actions acceptées par l'individu ou le groupe social et l'on présume qu'ils reflètent ses valeurs sous-jacentes essentielles. De même, ces principes guident les façons d'évaluer les motifs et les comportements des autres. On pense que les principes moraux sont si profondément enracinés et si liés à nos croyances sur nous-mêmes en tant que membre d'un groupe valorisé qu'ils vont presque inévitablement être activés au cours du processus de prise de décision morale et qu'ils guideront en conséquence aussi les comportements moraux. Les principes moraux constituent également les fondations des codes d'honneur et de conduite professionnelle et serviraient aussi de base pour les lois qui sont au cœur du travail des militaires professionnels, qu'il soit question de droit international ou de droit des conflits armés par exemple. Dans un contexte militaire également, les principes moraux se retrouvent dans les codes d'honneur qui régissent les comportements généraux ainsi que dans les règles d'engagement rédigées pour chaque mission militaire.

Les recherches antérieures appuient l'assertion qu'il existe des différences d'un individu à l'autre dans le jugement et le développement moral, bien que la base de ces différences individuelles demeure un sujet de débat. Plus particulièrement, on trouve des recherches divergentes sur l'importance du sexe et de l'âge comme facteurs pouvant rendre compte des différences individuelles dans les jugements moraux. Compte tenu de leur importance dans le processus de prise de décisions morales et éthiques et du débat en cours dans la recherche, nous continuons d'étudier les facteurs pouvant être liés ou influencer le choix et l'utilisation des principes moraux dans l'élaboration des jugements moraux. Plus précisément, la présente étude exploratoire cherche à répondre à deux questions. Premièrement, nous avons fait des recherches pour savoir s'il existe des différences d'une personne à l'autre dans le choix ou les préférences en ce qui concerne les principes moraux permettant de résoudre six dilemmes moraux. Deuxièmement, en considérant que ces différences existent, nous nous sommes demandé dans quelle mesure ces différences peuvent-elles être liées aux variables démographiques que sont l'âge et le sexe.

**Participants et procédure :** Dans le cadre d'une vaste étude sur la prise de décision morale, les participants à l'étude ont été recrutés par le biais de circulaires distribuées partout sur le campus de l'université Columbia ainsi que dans le système de recrutement en ligne du Center for the Decision Sciences. Soixante-quatre participants ont lu six dilemmes éthiques conçus spécialement pour cette étude et ont eu à y réfléchir. Deux de ces décisions n'étaient pas de nature morale, deux autres portaient sur des dilemmes moraux liés à des situations du monde civil. Quant aux deux derniers dilemmes, ils étaient fondés sur des incidents relatés dans une étude antérieure menée au

moyen d'entrevues faites auprès de membres des Forces canadiennes qui ont fait face à des dilemmes moraux au cours de leur service (voir Adams, Thomson et Sartori, 2005). Chaque participant a coté individuellement dans quelle mesure chacun des cinq principes moraux a influencé sa décision face à ces dilemmes et ils ont choisi leurs lignes de conduite de prédilection en regard de chacun de ces dilemmes.

**Résultats :** Les résultats de l'étude théorique à paliers multiples utilisée suggèrent qu'il existe en effet des différences d'un individu à l'autre associées à la préférence de principes moraux. Nos résultats montrent que les différences individuelles représentent entre 15 et 35 % de l'ensemble des choix de principe moral (pour une valeur moyenne de 25 %) face aux six décisions faisant l'objet de l'étude actuelle. De plus, l'étude théorique à paliers multiples révèle également quelques différences dans le choix du principe moral en fonction du domaine de décision. En particulier, les gens ont mentionné les principes moraux basés sur la sollicitude et sur les conséquences dans une proportion statistiquement plus importante pour la prise de décisions ayant des dimensions morales dans un contexte militaire ou non militaires que dans le cadre de décision dans le domaine qui ne relève pas de la morale. Les sujets interrogés ont également mentionné avoir eu recours au principe de l'intérêt personnel dans une mesure significativement plus importante dans le cadre de la prise de décision en contexte non militaire relevant ou non de la morale qu'ils s'en sont servis dans des situations militaires relevant de la morale.

Il existe aussi des différences marquées vis-à-vis l'importance que nos sujets interrogés affirment avoir accordé à l'utilisation des principes de morale basés sur la vertu et les règles dans les trois domaines de décision. Les principes de morale basés sur la vertu et les règles ont été utilisés de façon plus importante dans le cadre de prise de décision morale dans un contexte militaire que dans le cas de décision morale dans un contexte non militaire et il était moins probable qu'ils soient utilisés dans le cas de prise de décision n'étant pas liée à morale dans un contexte non militaire. Finalement, nos analyses révèlent que les modèles de résultats, en ce qui concerne le choix de principe moral, étaient cohérents dans le cas des deux scénarios de décision liée à la morale dans un contexte militaire ou non et les choix n'impliquant pas la morale, ce qui donne une crédibilité supplémentaire à la cohérence de ces résultats pour le domaine en question plutôt que d'être particuliers à ce scénario.

Les présents résultats indiquent également que ces différences d'un individu à l'autre dans la sélection des principes moraux sont associées à l'âge. Plus particulièrement, il était significativement plus probable que les sujets interrogés plus âgés de cet échantillon fassent appel aux principes de morale basés sur la vertu et la sollicitude envers autrui dans la prise de leurs décisions en réponse aux dilemmes moraux auxquels ils faisaient face que les jeunes sujets interrogés étaient portés à le faire.

**Discussion :** Nos résultats corroborent les études qui ont découvert qu'il existait des différences d'un individu à l'autre quant aux préférences de principes moraux. Ils entraînent également des conclusions qui montrent une corrélation positive entre l'âge et les différences dans le choix de principes moraux (p. ex., Reugger et King, 1992; Sankaran et Bui, 2003). Toutefois, la présente étude n'est pas en accord avec d'autres, par exemple Dursen (2005) et Haviv et Leman (2002), qui n'ont pas trouvé de preuves que l'âge entraînait une préférence pour une certaine approche dans le jugement moral.

Une explication pouvant justifier ces différences entre nos résultats et ceux de Dursen peut résider dans la nature des échantillonnages; les personnes faisant partie de son étude étaient tous les professionnels associés au ministère canadien de la Défense nationale alors que notre échantillonnage était formé d'un ensemble hétérogène de sujets venant du milieu universitaire et de la communauté. En ce qui a trait à la différence de résultats avec Haviv et Leman, il faut noter que nos participants répondaient à un ensemble de dilemmes moraux ayant été produits par d'autres alors que Haviv et Leman ont demandé à leurs participants de fournir des exemples de dilemmes moraux provenant de leur propre expérience de vie. Il n'est pas clair pour le moment de savoir exactement pourquoi les dilemmes « produits par d'autres » peuvent être associés avec des différences individuelles alors que les dilemmes tirés à même l'expérience personnelle ne le sont pas. La différence peut provenir de la nature ou de la cohérence des dilemmes moraux qui ont été utilisés ou celle-ci vient peut-être du fait qu'il existe un certain degré d'implication personnelle dans le dilemme utilisés comme stimulus. Il s'agit là de questions auxquelles d'autres recherches pourront répondre.

**Pertinence sur le plan militaire :** À partir du moment où les cadets ou les recrues entreprennent leur service militaire, on leur enseigne des codes de conduite et d'honneur complexes auxquels on s'attend à ce qu'ils se conforment et en fonction desquels ils seront jugés. En fait, probablement plus que dans toute autre profession, les codes d'éthique sont nécessaires pour les membres des forces armées, bon nombre de ceux-ci étant appelés à prendre des décisions concernant la vie et la mort de leurs propres collègues, de leurs adversaires et, malheureusement, de membres de la population civile, ces derniers devenant ainsi des dommages collatéraux des opérations militaires. Donc, compte tenu de l'importance de l'éthique pour la profession des armes, il est essentiel de comprendre les principes moraux qui guident la prise de décision et le comportement des militaires, ainsi que les différents éléments pouvant avoir une influence sur ce procédé. La présente étude contribue à l'important travail entrepris par le Programme d'éthique de la Défense en servant de guide et en raffinant les procédures qui serviront à mener les travaux empiriques à venir dans le but d'explorer les scénarios de situation de prise de décision morale dans un contexte militaire applicable aux missions opérationnelles des FC.

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# 1 Introduction

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What are the features that guide the judgment and decision making process in the moral realm? One foundational feature considered to be essential to this process is the notion of *moral principle* (Barnett, Bass, & Brown, 1994; Ferrell, Gresham, & Fraedrich, 1989; Kleiser, Sivadas, Kellaris, & Dahlstrom, 2002). Moral principles are personal philosophies and provide individuals with “a framework within which individuals contemplate issues of right and wrong and assist individuals in determining what is the right way to behave” (Bass, Barnett & Brown, 1999, p. 186; see also Lifton, 1985). Thus, they guide normative ethical standards (Ferrell & Gresham, 1985), those standards of intention and action that are accepted by an individual or social group, and reflect core underlying values (Haidt, 2007). Beyond guiding our own decisions and behaviors, they similarly guide evaluations concerning the motives and behaviors of others (Ferrell, et al., 1989). Moral principles are thought to be so ingrained and so tied to our beliefs about ourselves as members of a valued group that they will be almost inevitably primed during the moral decision making process and will thus guide moral behaviors as well (Haidt, 2007; Horgan & Timmons, 2007).

The fundamental nature of moral principles is also evident in the fact that they are relatively omnipresent, for instance, forming the underpinnings of international law (Buchanan, 2004), many Western legal systems (Jones, 1991), as well as codes of organizational and professional conduct (Bersoff & Koepl, 1993). The American Psychological Association's (2002) "Ethical Principles of Psychologists" and Code of Conduct; American Medical Association, (2006), are but two examples of professional codes of ethical conduct, but virtually all professions have codes of ethics as keystone documents (Bersoff & Koepl). Beyond specifying behaviors that are valued and sanctioned, these codes form relatively concise models outlining the ideals of the profession and codifying the responsibilities and duties of the members of a profession. Behaving in ways that are inconsistent with these codes often draws official censure from governing bodies and may lead to expulsion from professional associations.

The ubiquitous nature of moral principles is also manifest in the fact that they are embedded within virtually all models of moral and ethical decision making (e.g., Ferrell & Gresham, 1985; Hunt & Vitell, 1986; Jones, 1991; Stead, Worrell, & Stead, 1990). Although other individual-level variables (e.g., knowledge) and other factors such as social, organizational (Ferrell & Gresham, 1985), and situational factors (Jones, 1991) are acknowledged to also play an important role in moral decision making and particularly in the eventual expression of moral actions, it is generally agreed that underlying moral principles are a significant influence on moral decision making and behavior (Barnett, et. al., 1994; Ferrell, et al., 1989; Kleiser, et al., 2002).

The current study represents a portion of the work conducted within Defence Research and Development Canada (DRDC) Toronto's Applied Research Program (ARP) investigating moral and ethical decision making in military operations. Part of that ARP has been devoted to field studies in the context of operational military training (Thomson & Adams, 2007; Thomson, Adams, & Waldherr, 2008). The research summarized in this report reflects a separate line of laboratory investigation that is also a vital piece of the overall research program as the laboratory studies provide us greater control over situational factors and a higher number of participants than is possible in the field studies of this ARP. Specifically, in the current research, we explore the extent to which individual differences in moral philosophies exist, and the extent to which these

individual differences are associated with the age and the sex of the respondents. Having defined briefly moral philosophies and their role in the moral judgment and decision making process, we next review the major approaches to describing moral principles. These approaches provide the theoretical bases for assuming the existence of individual differences in moral principles. We then summarize the research concerning individual differences in moral principles in general, and then discuss the literature that has investigated those individual differences associated with age and sex more specifically.

## 1.1 Major Taxonomies of Moral Principles

One approach to describing moral principles, arising from philosophy, generally divides them into two over-arching classes (Barnett, et al., 1994; Ferrell & Gresham, 1985). The first, termed a **Teleological** orientation, encompasses those core values that are specifically concerned with the *consequences* of a behavior. For example, within teleological approaches, *utilitarianism* is tied to an efficient use of resources and reflects a belief that ethical behaviors are only those which provide the greatest benefits for the greatest number of people affected by the behavior. *Egoism* is based upon self-interest and involves evaluating the correctness of a behavior in terms of the consequences of the behavior to the evaluator. The second class of moral philosophy is **Deontological** in which moral obligations and commitments are deemed to be sacrosanct (Ferrell, et al., 1989). Here the intentions that motivate a behavior, rather than its consequences, are the core of the orientation. Universal moral laws and rules are to be applied to all situations. For instance, the *care-based* principle, with its emphasis on concern and compassion for others, is considered to be within the deontological class of moral philosophies.

A second major approach is represented by the cognitive-developmental models of moral development. Kohlberg (1969) developed a seminal model that has had a profound effect on thinking about moral principles, as well as on the course of research in this area. For Kohlberg, the stages of moral development are considered to be progressive, invariant and non-regressive, although the exact number of stages differs. The stages proceed from a first stage of development wherein morality is based on obedience to authority. The second stage focuses on personal interest/egoism and exchange, the third on the morality of interpersonal harmony, the fourth on laws and duty to the social order, the fifth on the morality of consensus, and the final stage on rational and deliberate social cooperation in which moral behavior is tied to universal moral principles (Rest & Narvaez, 1994).

A final approach, also from the realm of psychology, classifies moral principles on two dimensions: **Relativism** which reflects differences in the extent to which morals are based upon universal principles versus the particular situation, and **Idealism** which focuses on consequences and the welfare of others (Schlenker & Forsyth, 1977; Forsyth, 1980). These two dimensions give rise to four moral philosophical typologies. *Situationism*, a combination of high relativism and high idealism, rejects universal moral principles and believes that acts should produce the most benefit for all people. *Absolutism*, reflecting high idealism and low relativism, also embraces the notion of positive consequences for all people but believes that universal moral principles should guide decision and actions. While *Exceptionism* (i.e., low idealism and low relativism) acknowledges that universal moral principles may exist, these standards may be set aside to avoid negative consequences; that is, it does not automatically reject behaviors that involve negative outcomes for some people. Similarly, *Subjectivism* (i.e., low idealism and high



relativism) does not reject a behavior because negative consequences may ensue, but it eschews the notion of universal moral principles, believing all moral decisions to be (not surprisingly) subjective.<sup>1</sup>

While some differences emerge in these approaches to the general descriptions of moral philosophies, there are more similarities that underscore these schools of thought. The following, as summarized in Catano, Kelloway, & Adams-Roy (2000) represent the major moral principles that are assumed to guide moral decision making:

- Care-based: Concern and compassion for others: ‘Do no harm’;
- Virtue-based: Decisions and behavior are based on a sense of right and wrong and a sense of integrity, honor and honesty;
- Consequences-based: The results of outcomes as the appropriate basis for making a decision: ‘the ends justify the means’;
- Rule-based: Rules and laws are viewed as the most appropriate basis on which to make a decision;
- Self-interest-based: Decisions are influenced by the degree to which the outcome affects them personally; ‘Looking out for No. 1’.

## **1.2 Individual Differences in Moral Philosophy**

Perhaps the very existence of multiple moral philosophies attests to the fact that different people will invoke or be guided by differing principles when making a moral decision, thereby denoting the presence of individual differences in moral philosophy use. “Theoretically, individuals holding each of the ... types of ideology could be expected to reason differently about ethical issues, and to often reach different conclusions about the morality of particular actions” (Barnett et al., 1994, p. 472). Not surprisingly, the presence of these individual differences has been a focus of research interest within the area of moral decision making (e.g., Barnett et al., 1994; Bass et al., 1999; Forsyth, 1980; 1981; 1985; Forsyth & Pope, 1984).

For instance, in a series of studies, Forsyth (1980) found that individuals whose moral philosophy reflects a belief in universal moral principles had harsher ethical judgments on a series of moral vignettes than did other participants (see also Barnett et al., 1994 for similar results). In a subsequent study (Forsyth, 1981), individuals who indicated their personal moral philosophy as involving universal moral principles were more likely to rate actions that had intended negative consequences as least moral (see Forsyth & Pope, 1984 for similar results), while those individuals whose moral philosophy involved a willingness to violate universal moral principles to avoid negative consequences (i.e., an exceptionist orientation) rated the actions as most moral. Moreover, Forsyth (1985) also demonstrated that individuals endorsing different moral

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<sup>1</sup> It should be noted that while the semantics of the approaches embodied in the works of Ferrell and Gresham (1985) and Forsyth and colleagues (Forsyth, 1980; Schlenker & Forsyth, 1977) differ, both include considerations of various positions concerning the consequences of actions and the invariant versus a more comparative or relative application of moral principles across situations. Further, both approaches lead to roughly the same series of moral philosophies.

philosophies also processed decision-relevant information about their judgment and the consequences of their actions in different ways. Furthermore, these differing patterns were entirely consistent with what would be expected from each of the four identified moral orientations. Specifically, Idealists tended to weight the conformity principle more heavily than the consequences principle, while the reverse was true for Situationists. Subjectivists seemed to average across the consistency and the consequences of the judgment situation, while Exceptionists seemed to perform moral algebra, subtracting the negative from the positive aspects of the action to reach a moral judgment.

A recent effort on the part of the Department of National Defence (DND) also revealed evidence of individual difference in moral principle utilization. Conducted by the Directorate Human Resource Research and Evaluation (DHRRE), under the direction of the Defence Ethics Program (DEP, 2002), the Baseline Ethics Surveys assessed, in part, the personal moral philosophies that respondents used in making decisions in response to several scenarios that had been generated by previous focus groups concerning the moral and ethics issues relevant to DND personnel. Results of the 1999 survey revealed that although there was evidence of some consistency in moral principle preference, individual differences also were evident (Catano et al., 2000). That is, while Virtue-based approaches to ethical decision making were indicated as the most commonly used to evaluate these scenarios, a minority of respondents used consequences- and self-interest based moral principles, especially for military personnel. The results of a five-year follow-up survey were largely consistent with these initial findings, however, the second survey also revealed that the most frequently utilized moral philosophy adopted was a multiple philosophy approach (not assessed in the 1999 survey) in which people tended to use the specifics of the individual moral decision making situation in order to determine which moral philosophy or combination of moral philosophies they utilized in their judgment process.

The existence of individual differences in moral judgments is also reflected in an Army Ethics Program website case study poll (Walker, 2008). Here eleven administrative and operational scenarios relevant to the military and having moral implications are listed. Each scenario also includes four possible actions. Site users are encouraged to read each scenario and to indicate their choice of resolution. As of March 2007, an average of 3500 responses had been logged indicating endorsement of one of the four outcomes for each of the eleven scenarios. Although not a controlled experiment, results did indicate the presence of individual differences in moral judgments in that the results for the majority of the eleven scenarios showed that each of the four outcomes was endorsed from approximately 25% of the respondents. Although the work did not directly measure individual differences in moral philosophies, it is expected that these differences in moral judgments were guided by individual differences in the prevailing moral philosophies of the respondents. The work from within DND is important as it indicates that individual differences in moral philosophies are evident for both military and civilian DND personnel, giving credence to pursuing this line of research within the context of the current study, and as part of the larger ARP.

### **1.3 Age and Sex as Predictors of Individual Differences in Moral Philosophy**

Given the consistent evidence of individual differences in moral philosophies, it is not surprising that researchers next turned their attention to identifying the factors that were associated with

these individual differences. Of the approaches to categorizing or understanding moral principles, it is Kohlberg's (1969) model of moral development that speaks most directly to the notion of age and, to a lesser extent sex, as predictors of individual differences in moral philosophy.

### **1.3.1 Age**

The approach of Kohlberg's (1969) cognitive developmental stage model, in particular the notions that the stages are invariant, progressive and largely non-regressive indicates that moral development is associated with cognitive and developmental gains that can only occur with maturation. For instance, Kohlberg posited the stages 1 and 2 with their foci on negative consequences and egoistic concerns will always precede a focus on the reaction of others (stage 3) and rules and laws (stage 4). The highest level of development, (stage 5) based on the application of universal principles, is only attained by some adults. And indeed, the research conducted that informed his cognitive model of moral development as well as the research that resulted from it have supported the notion that higher levels of moral development are associated with greater years of age. This pattern is especially evident in developmental studies of children and adolescents in which generally higher levels of moral development are exhibited by older individuals (summarized in Crain, 1985). The same results have been found in some older samples as well. A survey of 2196 business students (Ruegger & King, 1992) revealed that age was significantly associated with perception of more ethical conduct. Students with the highest perceptions of ethical conduct were older than 40 years of age, with less ethical perceptions occurring with decreasing age. Similarly, Sankaran & Bui (2003) concluded that level of ethics increased with age in their study of college students.

Despite the elemental nature of the link between age and moral development in Kohlberg's model, the research literature is divided as to the extent to which age is related to moral decision making processes. Some research has not shown simple age effects, but rather found that people adopted higher levels of moral judgment in response to scenarios depicting targets that were similar to the age of the respondent (Chap, 1985). In her sample of military and civilian Department of National Defence employees, Dursun (2005) did not find significant age differences with respect to moral philosophy endorsement. Nonetheless, some studies have shown a positive relationship between age and ethical sensitivity (e.g., Harris, 1990; Mason & Mudrack, 1996; Ruegger & King, 1992).

Still other research has found a curvilinear relationship between age and moral philosophy (Pratt, Golding, & Hunter, 1984), with the selection of moral principles that are associated with higher levels of moral development increasing during adolescence and throughout early adulthood (see Armon & Dawson, 1997; Colby & Kohlberg, 1987; Dawson, 2002; Czyzowska & Niemczynski, 1996) and seeming to decrease somewhat in old age (Pratt, Golding, Hunter and Norris, 1988; see also Aldrich & Kage, 2003). Further, in their research assessing moral thinking in a sample aged 14 to 92 years, Pratt, et al. found that their participants aged 75 or older showed significantly lower stages of moral development than did their younger participants. Overall, moral reasoning was strongly correlated with age in children, moderately correlated with age in young adults, and education had a significant impact on this relation in each age group (see also Dawson, 2002). Rest, Davison & Robbins (1978) similarly concluded that age effects are confounded with educational level.

### 1.3.2 Sex

Although not explicitly implicating sex as a defining feature of the theory, sex differences emerged in the research program that supported Kohlberg's work. While most people progress to the conventional level of moral reasoning, at this stage, women tended to make judgments involving good intentions and social approval motivations, whereas men's judgments were based on social laws and order – ostensibly a higher level of the conventional stage of development (Lifton, 1985). Sex differences were even greater for those people who attained the post-conventional stage of development. Here men were more likely to express moral judgments based on “contractual obligations and democratic principles (stage 5) or individual conscience and universal ethics (stage 6)” than did women (Lifton, p. 313), with moral stage equivalence only occurring for those women who attain educational and professional levels similar to men.

Even Piaget's research appears to implicitly support the existence of sex differences in moral judgment (see Lifton, 1985). Piaget assumed justice motives based on equity with their inherent accounting of individual circumstances to be superior to justice motives based on equality, which applies a law equally to all, regardless of circumstances. Piaget's research found equity based justice moral judgments to be evident in the communal play of boys to a far greater extent than it was in the play of girls. Thus, boys evidenced “the developmentally superior position of justice as equity as the basis for their moral judgments, while girls prefer[ed] the developmentally inferior position of justice as the basis for their moral judgments” (Lifton, p. 312). Thus, the research associated with both seminal cognitive developmental models provides evidence that sex is an important individual difference with respect to moral judgments. Unfortunately, both seemed to indicate that men would invariably provide superior moral judgments.

Gilligan (1982), a collaborator of Kohlberg's, noted that the Kohlberg's stage model was developed solely based on interviews with men, and that this orientation is reflected in the model's focus on rules, regulations and moral principles (Crain, 1985). In response to this limitation of Kohlberg's model, Gilligan proposed that while sex might well affect moral judgment, it needs not reflect a qualitative difference. She argued that while previous theorists had correctly identified a universal moral principle of justice, a second universal moral principle also existed, that of responsibility and relationships, that is, the ethics of caring, and that women favor the ethics of caring to a greater extent than do men. Thus, Gilligan's influential model explicitly details individual differences that are associated with sex. Importantly, however, for Gilligan, these differences are assumed to reflect differences in moral orientation, with no prescription as to moral superiority-inferiority being associated with sex.

In general, the empirical literature concerning sex as a predictor of individual differences in the moral judgment realm has been as mixed as that concerning age effects. Results of studies directly testing Kohlberg's moral developmental model often demonstrated that females were more morally developed at a younger age (e.g., Krebs & Gilmore, 1982, cited in Lifton, 1985), while males tended to show higher levels of moral development in later years (e.g., Bussey & Maughan, 1982, also cited in Lifton, 1985). There is also some evidence of females appearing to be more ethical in later years as well. Female accounting students indicated that they were less tolerant of academic misconduct and also less cynical and less involved in acts of academic dishonesty (Ameen, Guffey, & McMillan, 1996). Other research has supported Gilligan's conceptualization that men and women differ in moral orientation, not moral developmental level. Lyons (1983) found that across age groups ranging from children to adults, females evidenced a

caring orientation, while males endorsed a justice orientation (see also Bjorklund, 2003). Similarly, as part of a recent study of DND personnel, Dursun (2005) found that women were significantly more likely to endorse a care-based approach to solving ethical decisions than did the men in the sample.

However, a simple relationship between sex and moral development is not universally supported. For instance, in a review of the psychological literature investigating sex differences in moral judgments, (Lifton, 1985), the preponderance of empirical studies (27/45) through 1983 showed no sex differences with respect to moral development, although 18 of the 45 studies did show an effect for sex. Haviv and Leman (2002) found that sex was not related to any moral orientation within a sample of college students (also see Sankaran & Bui, 2003). Similarly, Chap (1985) found no sex differences in judgments of moral dilemmas, nor did Radtke (2000) in a study of accounting professionals. As well, the relationship between sex and moral orientation has not always been replicated (e.g., Forsyth, Nye, & Kelley, 1988). Aldrich and Kage (2003) found that sex differences faded with increasing age, that is, the moral judgments of men and women converged in later years. Finally, Pratt, Golding, Hunter, & Norris (1988), found that the relation between sex and moral orientation actually lay in the sex role, rather than sex of respondent, with greater endorsement of opposite sex role attributes being associated with higher levels of moral development (see also Pratt, Golding, Hunter, & Sampson, 1988).<sup>2</sup>

Still other research posits that the notion of moral orientation or development being associated with either sex, age or gender role is misleading. Mason and Mudrack (1996) found that employment status had a significant effect on the gender-moral judgment relation, with no sex differences emerging among unemployed men and women, while employed women appeared to be more ethical. In her research, Glover (2001) explored the role of gender role, level of education and personality traits on moral orientation. Results here showed that moral orientation was most associated with traits, rather than any of the other predictors assessed. Specifically, a care orientation was associated with personality types in which sensing and perceiving predominated, while a justice orientation was more likely to be associated with judging and intuition. Gender role contributed very little to the variance accounted for in moral orientation.

## **1.4 Summary and Hypotheses**

In summary, theorists give moral principles an important role in making important moral decisions in everyday life. Moral principles also form the foundations of codes of professional conduct and honor as well as the basis of laws that are at the heart of the work of professional militaries, including international law and law of armed conflict. Within a military context as well, moral principles are also evident in honor codes that guide general behaviors and in rules of engagement drafted for individual military missions. Given the hypothesized importance of moral principles in guiding judgment and behavior, it is not surprising that a fair amount of research has been conducted in this area.

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<sup>2</sup> It should be noted that the link between moral orientation and gender role is consistent with Gilligan's later work in this area (see Gilligan & Wiggins, 1988).

Research also reveals that there are individual differences in moral judgment and development, although the basis of these individual differences remains a subject of debate. More specifically, there is conflicting research concerning the importance of sex and of age as factors that might account for individual differences in moral judgments. Given this ongoing debate in the literature, in the current research, we continue to investigate the factors that may be related to and may influence moral principle selection and use in making moral judgments. More specifically, in the present research, we sought to explore the within- and between-individual variation in the use of the moral principles across moral dilemmas. That is, we explored the potential role of the individual-level predictors of sex and age in explaining any of the preferences in the selection of specific moral principle used to inform decision making.

## **1.5 Method**

### **1.5.1 Participants**

Our contractor at Columbia University in New York City recruited participants using flyers distributed across campus as well as the on-line recruiting system of the Center for the Decision Sciences at Columbia University and admitted qualified participants to the study on a first-come, first-serve basis. They advertised the study as a one-hour “real-world decision-making” computer-based study, for the completion of which participants would receive \$15. Sixty-four participants successfully completed the study: 20 “younger” (i.e., aged 18-30) women, 16 younger men, 14 “older” (i.e., older than 30) women, and 14 older men.

### **1.5.2 Materials**

In collaboration with our contractors at Columbia University, we designed six ethical dilemmas that offered a choice between two courses of actions. In particular, we built two non-ethical dilemmas and their associated choice options so that they would convey little moral awareness and constitute simple, mundane everyday-type dilemmas (see Appendix A). We wrote the other four dilemmas and their choice options so that they would generate greater moral awareness than would the non-ethical dilemmas. We based two of the dilemmas on the results of a previous study (Thomson, Adams, & Sartori, 2005) within the moral and ethical decision making in operations project (see Appendix B). Here, senior Canadian military commanders recounted in detail their personal experiences that involved confronting and making decisions that involved moral and ethical dilemmas while on operations. The remaining two scenarios were from the realm of ethical dilemmas individuals might encounter in the course of their lives (see Appendix C).

With respect to each course of action, the participants assessed three components of *moral intensity* using three items (see Appendix D) that tapped into the dimensions of social consensus, and magnitude and likelihood of (harmful) consequences, respectively (Dursun & Morrow, 2003, based on Singhapakdi, Vitell, & Kraft, 1996). The 7-point Likert-type rating scales ranged from, respectively, *Appropriate* to *Inappropriate*, *Minor* to *Severe*, and *Not at all likely* to *Very likely*. The participants also judged the *morality* of each option on a 7-point, eight-item semantic-differential measure (Reidenbach & Robin, 1990). Although some researchers have questioned the psychometric properties of this measure (McMahon & Harvey, 2005), its overall score

has shown adequate internal consistency reliabilities across various studies (i.e., in the .70 to .90 range; Reidenbach & Robin).

The participants evaluated their *moral awareness* on a single 7-point Likert-type rating scale ranging from *Not at all* to *Very much* that asked them to rate the extent to which the dilemma *as a whole* involved ethical and moral considerations. Finally, they rated their likelihood of endorsing each of five *moral principles* while trying to resolve the decision, on 7-point Likert-type scales ranging from *Not at all* to *Very likely*. As our work is ultimately for the Canadian Forces, we chose the five moral principles recognized by the CF DEP, that is, *care-*, *consequences-*, *rules-*, *self-interest-*, and *virtue-based* moral principles and measured them using 15 items adapted from Dursun, Morrow, & Beauchamp (2004). These five scores will be our primary dependent variables of interest in the present report.

### **1.5.3 Design and Procedure**

In summary, the participants saw a total of 12 choice options nested within 6 decision dilemmas (i.e., 2 options per dilemma). In particular, 4 options were nested within the 2 “non-ethical” dilemmas, 4 options, within the 2 “military” dilemmas, and 4 options, within the 2 “personal” dilemmas (we present the dilemmas in Appendix A).

The participants took part in the study individually and privately on personal computers, in the Center for the Decision Sciences at Columbia University. The experimenter briefly introduced them to this real-world decision-making study and told them they would be presented with six decision dilemmas, each followed by series of questions. The experimenter asked them to carefully read each dilemma and do their best to imagine themselves in the described situation when considering and making the decision.

After reading an information sheet and providing informed consent, in accord with the policies of the Institutional Review Boards of Columbia University and DRDC Toronto, the participants read a randomly selected dilemma (out of the six). Following the presentation of the dilemma, they saw the two associated courses of action (i.e., one at a time and in a counterbalanced order across participants) and selected which of these two courses of action they would most likely engage in, thus providing a proxy for moral intent. After selecting a course of action, they rated various characteristics of each of the two courses of action (i.e., moral intensity and judgment) as well as of the dilemma as a whole (i.e., moral awareness and principles). They went through this sequence for each of the remaining five dilemmas.

## **1.6 Results**

### **1.6.1 Description of the Analyses**

Given the nature of the data, that is, repeated measurements on individuals, we utilized multilevel modeling (Goldstein, 1995) to distinguish within- from between-individuals variability in the moral principle scores. Multilevel models contain variables measured at different levels of a hierarchy that consists of lower-level observations nested within higher-level(s) units. Examples include individuals nested within groups, employees within organizations, students within

schools, or, as in the present study, repeated measurements within individuals. Kreft and De Leeuw (1998) provide an excellent introduction to multilevel modeling.

Multilevel modeling is a type of regression model particularly suitable for hierarchical data. In contrast to conventional ordinary least squares regression models, the equation defining the multilevel model contains more than one error term, that is, one for each level of the hierarchy (e.g., within and between individuals). The basic idea in multilevel modeling is that the dependent variable – located at the lowest, most detailed level of analysis - has a repeated-measures as well as an individual component, as do(es) the independent, or predictor, variable(s).

Consider our current exercise of repeated measurement within individuals. The first step towards modeling between-individuals variability is to let the regression intercept vary among individuals, reflecting that some individuals tend to favor, on average, greater endorsement of the moral principle, while other individuals do not endorse it as greatly. One can try to find explanations for this variation in the population of repeated measures by including measurement-level variables, such as the type of dilemma, to the model. A second option is to try to find explanations in the population of individuals by introducing individual-level variables, such as age or sex.

Yet the individuals can differ in many more ways. It is possible, for example, that the effect of the type of dilemma on moral principle selection is stronger in some individuals than it is in others. In multilevel modeling, this phenomenon is modeled by making the regression slope random. An interaction between a variable at the first level of the hierarchy and a variable at the second level of the hierarchy is called a cross-level interaction. The inclusion of such an interaction may partly explain the between-individuals variability around the average regression slope.

In the current study, the first level of analysis was at the repeated-measures level, with six such measures per individual for a total of 384 data points, whereas the second level of analysis was at the level of the individual ( $N = 64$ ). In the models described below, moral principle score is the dependent variable, two dummy-coded variables representing the domain of the dilemma are first-level, within-individuals, predictors, and the age and sex of the individual are second-level, or between-individuals, predictors.

We present four nested models below. Model 1 is the null model and provides an estimate for the grand mean score across dilemmas and individuals, as well as a baseline for the estimation of the variance components in comparisons with more complex models. In this model, the moral principle score at the individual level is expressed by the sum of the 1) grand mean (called intercept in the tables included in Appendix E), 2) deviation of the repeated-measure score from the individual's own mean (residual variance) and 3) deviation of the individual's mean score from the grand mean (intercept variance).

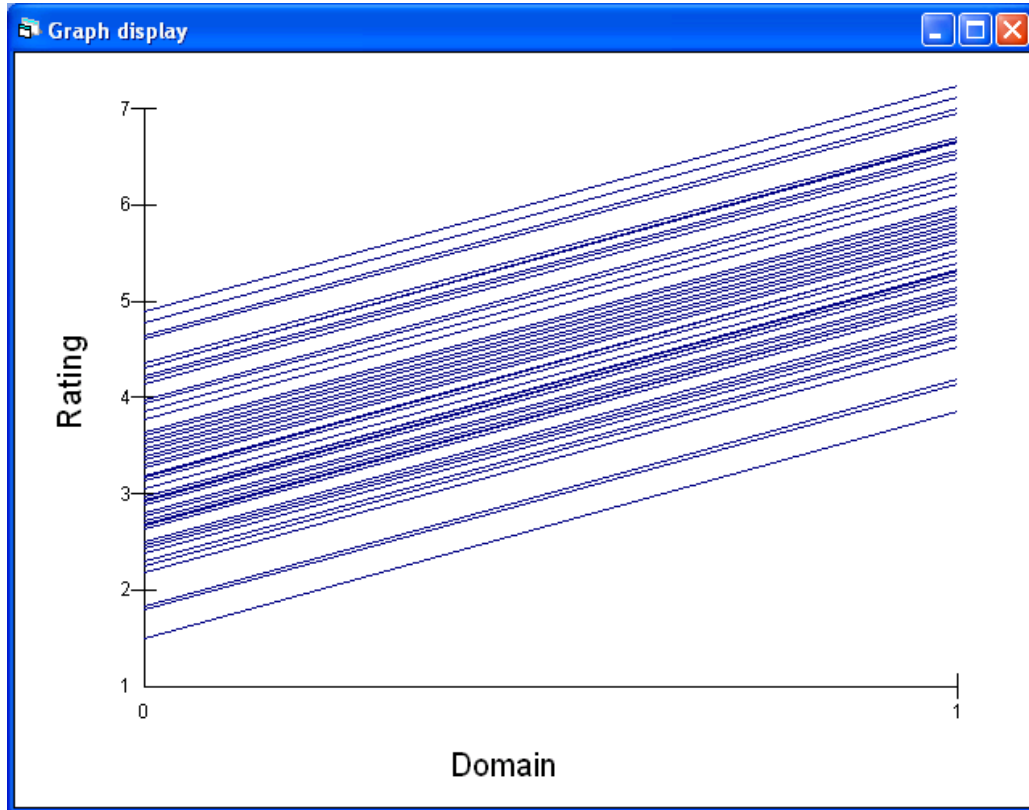
Model 2 includes the two first-level dummy-coded variables (named military and other) as predictors of the moral principle score. The non-ethical domain was used as the reference group thus the military (other) variable represented the difference between the mean principle score of the military- (other-) related dilemmas and the mean principle score of the non-ethical dilemmas. We specified these slopes as random to reflect between-individuals differences in the relationship between the moral principle score and the domain of the dilemma. For example, the military-



related dilemmas may lead some individuals to report a greater reliance on virtue-based principles than they do for others (i.e., for some individuals, the regression slope may be quite steep; for some individuals, it may be negative, whereas it may be positive for most). Thus, Model 2 provides estimates of the mean regression slopes across individuals and of the between-individuals variation around these slopes (e.g., military slope variance).

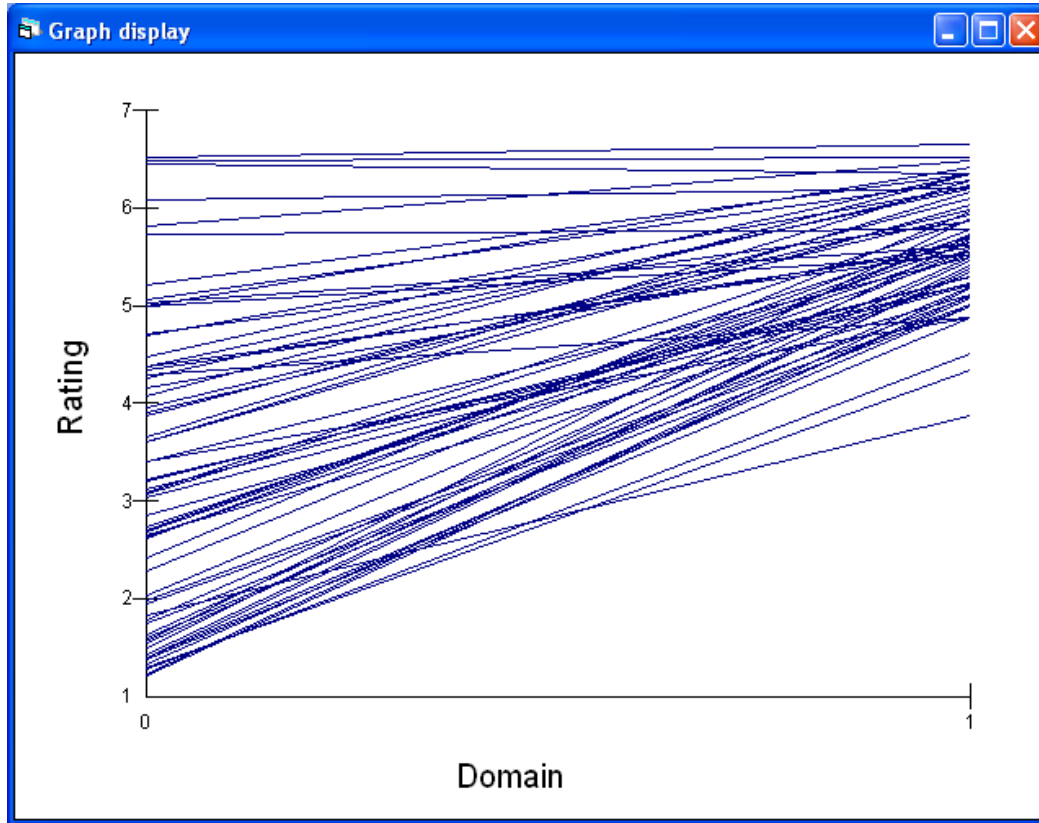
For demonstration purposes, Figures 1 and 2 represent two cases where 1) only the regression intercept varies across individuals (the regression slope is fixed; Figure 1), resulting into 64 (i.e., one per individual) parallel regression lines with varying intercepts, and 2) both the intercept AND slope fluctuate (Figure 2), resulting into 64 regression lines with varying intercepts AND slopes. Thus, in the former case, a given individual's regression line simply represents the difference between her care-based principle score across the non-ethical dilemmas (i.e., at domain = 0) and her care-based principle score across the other-related ethical dilemmas (i.e., at domain = 1), *assuming that this difference is constant across individuals* (yet the individual care-based principle score across the non-ethical dilemmas can change). In the latter case, a given individual's regression line represents the difference between her care-based principle score across the other-related ethical dilemmas and her care-based principle score across the non-ethical dilemmas, *now letting this difference vary across individuals*.

## 1.7



*Figure 1: Model 3 contains the categorical age (younger = 0 and older = 1) and sex (women = 0 and men = 1) variables for an explanation of the variability in the intercept.*

## 1.8



*Figure 2 Model 4 adds the Age X Military, Age X Other, Sex X Military, and Sex X Other variables for an explanation of the variability in the slopes among individuals.*

Model 3 contains the categorical age (younger = 0 and older = 1) and sex (women = 0 and men = 1) variables for an explanation of the variability in the intercept. Lastly, Model 4 adds the Age X Military, Age X Other, Sex X Military, and Sex X Other variables for an explanation of the variability in the slopes among individuals.

We fitted the multilevel models to the data using MLwiN Version 2.02 (Rasbash, Browne, Healy, Cameron, & Charlton, 2005), and we used the likelihood-ratio (named “Deviance”) test to evaluate the improvement in fit between nested models (Snijders & Bosker, 1999). We divided each coefficient / variance component by its standard error (reported as *SE*) to assess its significance; the resulting value approximating a z-distribution (Snijders & Bosker).

### 1.8.1 Multilevel Models

There was significant between-individuals variability in all of the principles scores, ranging from 15% (care) to 35% (self-interest), with an average of about 25%. Without a doubt, there were

individual differences associated with the selection and use of moral principles in making these moral decisions, or, in other words, repeated measurements within individuals were more similar to one another than did repeated measurements obtained from different individuals. Hence, it was productive to bring in individual-level predictors to potentially explain some of these individual differences.

We pursued our testing of the nested models by adding the military and other dummy-coded variables to Model 1 (specifying their coefficients as random), in order to, as was mentioned previously, reflect between-individuals differences in the relationship between the moral principle score and the domain of the dilemma. Model 2 revealed significant fixed effects associated with the two first-level dummy-coded variables across all principle scores as well as significant variation around those slopes, signifying great variability across individuals in the relation of the domain of the dilemma to principle selection/use (except for the self-interest-based principles, for which Model 2 only showed a significant effect of the military variable).

Looking at the mean principle scores across domains (as shown in Table 1), we found that, the participants were significantly *less* likely to rely on care- and consequences-based principles to resolve the non-ethical dilemmas than they were to rely on these principles to resolve either the military or other dilemmas. They were also significantly *less* likely to choose rule- and virtue-based principles to solve the non-ethical dilemmas than they were to choose these principles to solve the other dilemmas, and they were significantly *less* likely to choose these principles to solve the other dilemmas than they were to choose them to solve the military dilemmas. Lastly, the participants were significantly *more* likely to report using self-interest based principles to resolve the dilemmas in the non-ethical domain than they were to report using these principles to resolve the dilemmas in the military domain. Essentially, across principles (except for self-interest-based principles), the pattern of results were similar between non-ethical and the two ethical domains, regardless of whether the ethical domain tapped military or non military ethical issues.

## 1.8.2 Descriptive Statistics

*Table 1 Descriptive statistics (N=64).*

Principles	Domain					
	Non-ethical		Other		Military	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Care	3.27 <sub>a</sub>	1.99	5.61 <sub>b</sub>	1.10	5.63 <sub>b</sub>	1.30
Consequences	4.33 <sub>a</sub>	1.83	5.57 <sub>b</sub>	1.27	5.47 <sub>b</sub>	1.34
Rule	3.09 <sub>a</sub>	1.80	3.98 <sub>b</sub>	1.45	4.71 <sub>c</sub>	1.53
Self-interest	5.20 <sub>a</sub>	1.67	5.11 <sub>a</sub>	1.47	4.22 <sub>b</sub>	1.62
Virtue	3.50 <sub>a</sub>	1.98	5.07 <sub>b</sub>	1.52	5.55 <sub>c</sub>	1.27

Note: Means in the same row that share different subscripts are significantly different at alpha = .05 (using the Holm procedure).

Model 3 showed significant fixed effects of age on the care and virtue scores only (sex was not a significant predictor of principle score),  $B = 0.47$ ,  $SE = 0.22$  and  $B = 0.58$ ,  $SE = 0.24$ , respectively, with older participants being more likely to report relying on these principles to resolve the dilemmas than were younger participants (see Appendix E). Age indeed proved useful in predicting between-individuals variability in the care and virtue intercepts. Model 4 did not yield significant results, suggesting that neither age nor sex were significant predictors of the between-individuals variability in the slopes.

## 1.9 Discussion

The results of the multi-level modeling analysis used in the current research suggest that there are indeed individual differences associated with moral principle preference. Our results showed that individual differences accounted for between 15 and 35% of the variance in moral principle selection, accounting for an average of 25% of the variance in moral principle selection across the six decisions explored in the current research. Moreover, multilevel modeling analyses also revealed some differences in moral preference selection occurred based on the decision domain. Specifically, people reported invoking care- and consequences-based moral principles to a statistically significantly greater extent in making decisions that involved moral dimensions in both military and non-military than in decisions in the non-moral domain. Respondents also reported using the principle of self-interest to a significantly greater extent in the non-moral and the moral non-military decisions than they did in the case of military moral decisions. There were also significant differences in the extent to which our respondents reported using virtue- and rule-based moral principles across the three decision domains. Virtue- and rule-based moral principles were used to a greater extent when making military moral decisions than the non-military moral decisions, and were least likely to be used when making non-military non-moral decisions. Finally, our analyses revealed that the pattern of results with respect to moral principle choice were consistent across the two scenarios representing the military moral, the non-military moral and the non-moral choices, giving additional credence to the consistency of these results for the domain in question, rather than being idiosyncratic to the individual scenario.

It is perhaps not surprising that moral decisions, by definition decisions that explicitly involve the welfare of others, invoked the greater use of care-based moral principles (concern for others) in guiding decisions, whether the domain involved military or non-military situations. With respect to consequences-based principles, all we can conclude from the present study is that people were concerned with the impact of the outcomes of these situations; our data do not allow us to conclude whether they were using a general 'end justifies the means' rubric, or were weighing the greatest benefits for the most people (i.e., using utilitarianism) as the basis of their consequences-based principle selection. The latter would, of course, be more consistent with the same motivation underlying care-based principles, and thus provide a viable explanation for this pattern of results.

Given these results, it is interesting however, that self-interest was reported as guiding both non-moral and non-military moral decisions to a significantly greater extent than the military moral decisions. Although we had no specific hypotheses in this regard, one might have anticipated the use of self-interest to a greater extent in non-moral decisions; after all, these decisions would only impact on the respondent alone. It is not clear why self-interest was also invoked in the current non-military moral scenarios as well. Perhaps the latter result was because our civilian

respondents had an easier time imagining themselves in these non-military situations or indeed had experienced similar situations and thus they were more apt to consider the extent to which their own interests would be met, versus the military situations which would have been well beyond their current experience. Perhaps the military moral decisions were of such import, that self-interest simply played a less central role in decision making, given the other moral principles that were also invoked. Because the current data do not assess past experience or the ability to imagine the situation depicted, these explanation are speculative and left to future researchers to pursue.

Finally, we found that virtue- and rule-based principles were reported as being invoked to the greatest extent in the military moral scenarios, somewhat less so in the non-military moral decisions, and least of all in the non-moral scenarios. Indeed, each of these domains was statistically significantly different from each other in terms of the extent to which virtue- and rule-based principles were used by respondents to make their decisions. It makes intuitive sense that the universal principles and high idealism that comprise virtue- and rule-based ethics are not overriding drivers of non-moral decisions. Although the underlying reason for the significant difference in the reported use of virtue- and rule-based principles between military and non-military moral decisions is not clear, again the magnitude of the scenarios depicted in the military moral scenarios may have pulled for more idealism and universal principles than did the relatively localized and personal non-military moral dilemmas. This too is left as a question for future research to explore.

### **1.9.1 Age and Sex as Individual Level Predictors of Moral Principle Preference**

Our results indicated that these individual differences in moral principle selection are associated with age. Specifically, older respondents in this sample were significantly more likely to invoke care- and virtue-based moral principles in making their decisions in response to the moral dilemmas than were younger respondents. Our results corroborate those studies that found a positive correlation between age and differences in moral principle selection (e.g., Reugger & King, 1992; Sankaran & Bui, 2003). This research is not consistent with that of others, for instance, Dursun (2005) and Haviv and Leman (2002), who did not find evidence of age affecting a preference for a particular approach to moral judgment. One reason for these differences between the current results and those of Dursun may lie in the nature of the samples, in that hers were all professionals associated with DND, while our sample may have been comprised of a mixed set of respondents, reflecting both university and community representation. With respect to the differing results of Haviv and Leman, it should be noted that our participants were responding to a set of moral dilemmas that had been generated by others, while Haviv and Leman had their participants provide examples of moral dilemmas from their own lives. It is not immediately clear exactly why ‘other-generated’ dilemmas might be associated with individual differences while self-generated dilemmas are not, it may lie in the nature or the consistency of the moral dilemmas that were used, or perhaps in terms of some level of personal involvement in the dilemma that is used as the stimulus. These are question left to future research to address.

As our age groups only involved individuals between the ages of 18 and 30 in our younger groups and between older than 30 years of age in our older group we are unable to speak to that research which has found evidence of a curvilinear effect between age and moral development (e.g., Pratt,

Golding, Hunter and Norris, 1988). Further, because we did not assess the demographic variable of education, and the study sample could include both campus- and community-based respondents, we also have no way of knowing the extent to which the current findings for age are confounded by education level.

We did not find evidence that sex played a role in moral principle preference in the present study. Thus, our results also clearly differ from previous findings (e.g., Dursun, 2005; Gilligan 1982) in that sex was unrelated to moral principle preference. This may be due to the composition of our sample (sample was from New York state, which is usually associated with Democratic ideals, including students from a liberal arts university), at least relative to the sample used by Dursun. Of course, these results may be also due to our small sample sizes (i.e., only 30 men and 34 women). On the other hand it is important to note that the current results are consistent with others (e.g., Chap, 1985; Forsyth et al., 1988; Haviv and Lerman, 2002; Radtke, 2000), including Lifton (1985) whose review of the literature specifically exploring sex differences found that the preponderance of studies found no significant sex differences in moral preference selection.

## **1.10 Future Research**

The intriguing results of researchers such as Glover (2001) have suggested that moral principle selection might be most associated with individual differences in personality traits, rather than sex, or age. Following on from this thinking, individual differences in emotionality and emotional regulation (Eisenberg, 2000) and/or empathy (Davis, 1983) may be associated with a greater invoking of more care-based philosophies in moral judgment and decision making. Conversely, individual differences in Authoritarianism (McHoskey, 1996), Personal Need for Structure (PNS - Thompson, Naccarato, Parker & Moskowitz, 2001), might be associated with a reliance on rule- or punishment-based principles. Finally, variables such as cognitive complexity (Jonassen, & Grabowski, 1993) or the Need for Cognition (NFC - Cacioppo & Petty, 1982), might be associated with those principles traditionally most associated with higher levels of moral development, or perhaps with the ability to be more flexible in the application of moral principle to the specifics of a given decision making context.

Similarly, Batson and colleagues (Batson, Kobrynowicz, Dinnerstein, Kampf, & Wilson, 1997; Batson, Thompson, Seufferling, Whitney, & Strongman, 1999) have begun to investigate the intriguing psychological constructs of moral integrity; i.e., the degree to which people wish to be moral, and moral hypocrisy which occurs when an individual is interested in appearing to be moral, without necessarily actually being moral in their decisions and behaviors. They have demonstrated that a substantial number of people in their studies will assign themselves a more favorable task if given the opportunity to do so (Batson et al., 1997), even when a salient moral standard is added. For example, many participants in these studies elect to toss a coin ostensibly to determine whether they or their partner would engage in a boring task. However, as a majority of participants appeared to 'win' the coin toss, Batson et al. concluded that the participants were engaging in moral hypocrisy, that is, engaging in behaviors to appear to be doing the right thing (i.e., coin toss), but when given the chance, manipulating the outcome to ensure they themselves received a more favorable outcome. It would be interesting to determine the role of moral integrity in the context of these dilemmas at least in terms of providing role playing outcomes that involve more or less personal costs or benefits for respondent. Moreover, it would be interesting

to determine the role of these various potential individual differences in moral philosophy preference and behavioral intention when there is cost to the individual in the behavior.

Consistent with other models of ethical decision making it would also continue to be useful to explore other classes of variables that affect such judgments and behavior including situational factors such as moral intensity. Moral intensity (Jones, 1991) refers to elements of the decision making situation itself that he proposes are as influential on decision making and ethical behavior as are the characteristics of the decision maker. Indeed, according to Jones' Issue-Contingent Model of Decision Making, moral intensity will affect all stages of moral decision making from awareness through to behavioral expression. The dimensions of moral intensity include the magnitude of the consequences of the situation, the social consensus concerning how one should respond to the situation, the probability that the anticipated consequences will occur, the temporal immediacy of the anticipated and probable consequences, the proximity of the decision maker to the recipient of the anticipated consequences of the decision, and the concentration of the effect of the decision (i.e., the number of people who may be affected by the decision makers judgments and behaviors). Research (almost exclusively conducted within business and marketing contexts) has tended to support the tenets of the Issue Contingent Model (e.g., Davis, Johnson, & Ohmer, 1998; Jaffe & Pasternak, 2006; May & Paull, 2002; Singhapakdi, Vitell, & Kraft, 1996, although there have been calls for an expanded model that takes into account organizational setting and context by Kelley & Elm, 2003). Indeed, research exploring moral intensity has already begun to explore the effects of the dimensions of moral intensity of the situation and the moral philosophies of the decision maker (e.g., Singh, Vitell, Al-Khatib, & Clark, 2007; Singhapakdi, Vitell, & Franke, 1999). If particular individual differences underlie differences in moral philosophies, then identifying which of these factors account for the most variance in these effects will certainly advance the field. Finally, given the relatively consistent finding of education level underpinning of many of the sex and age effects it would also be useful to better understand the role of education both as a main effect and perhaps in interaction with or intriguingly as a moderator of the other variables cited above. All of these represent potentially fruitful avenues for future investigations in this area.

## **1.11 Military Relevance of this Work**

From the time military cadets or recruits enter military service they are taught elaborate codes of conduct and honor to which they are expected to adhere, and by which they are judged. Indeed, perhaps more than any other profession, codes of ethics are necessary for members of the armed forces, as many are called upon to make decisions concerning the life and death of its own members, its adversaries, and most unfortunately, also concerning civilian populations who may become collateral damage of military operations. Indeed, as Davenport (2000) eloquently states "What makes the military profession unique is that it is sanctioned to exercise on behalf of the client-state the ultimate powers of destruction. In short, the military has a unique obligation to be constrained by moral integrity and competence in the conduct of war" (p. 1). Although the approach to ethics may differ between countries (i.e., the United States uses a compliance-based model, Australia uses a prevention-based approach, while Canada uses a top-down values-based approach [DEP, 2002]), the overall aim is the same: to outline the obligations, responsibilities and duties of members of the profession of arms. Given the importance of ethics to the profession of arms, understanding the moral principles that are used to guide the decision making and behavior of its members, as well as the various influences on this process is essential. The current research



adds to this important work begun by the DEP, by piloting and refining procedures for future work exploring military moral scenarios that are relevant to CF operational missions.

Indeed, the governments and militaries of many nations have witnessed the aftermath of instances where such fundamental issues were either unaddressed or vigilance was not adequately maintained in this regard (e.g., Mei Lei massacre, Somalia, Srebrenica, and Abu Ghraib are but a few recent examples). The costs of a failure to adhere to the highest codes of ethical military conduct are varied and wide ranging. At an individual level, they include stress casualties among military personnel. At an organizational level, such episodes generate periods of angst and instability within a military. Finally, such lapses often engender immediate and acute shifts in national and international sentiment, public opinion and support for militaries and the missions they are asked to undertake. At each level, these are profound legacies that may resound for years. It is important to remember that all of these examples and their wide-ranging and long-lasting national and international effects resonate from the decision and actions of individual soldiers, or small groups of soldiers, often reacting to situations of intense stress. Thus, it remains vital that we understand moral decision making and behavior at the individual level and the various factors that can influence it. Again, this pilot work seeks to begin this process by beginning to develop a methodology to better understand moral philosophy choice and those individual differences that may be associated with moral philosophy preference.

Forward-looking approaches to the conduct of future operations which the CF is adopting embrace a number of new concepts including Effects Based Approach to Operations (EBAO), Network Enabled Operations (NEOps), and Joint, Interagency, Multinational and Public (JIMP) operations. In addition, the pace of technological advancements means that new tools and equipment are constantly being developed and are rapidly deployed into the field. These current and emerging realities beget additional layers of complexity and consequent moral and ethical challenges with which modern militaries such as the CF must contend. Given the increasing complexity of current and anticipated future military operations remaining attentive and mindful in terms of ethical development, decision making and action would seem to be an essential task for the CF.

Similarly, such efforts would seem a central activity for an agency such as DRDC, whose mission is to provide world-class research to support the needs of the CF and its security partners, by providing a thoughtful and rigorous scientific research program concerning the antecedents, correlates and consequences of ethical decision making and behavior in response to the realities of the range of CF military missions. Such a research program would provide the sound empirical basis for the development of effective educational and training mechanisms to ensure the highest ethical decision making and behavior standards of the CF, DND and security partners. As such, continuing to engage in research concerning moral and ethical decision-making would seem to be as vital for DRDC (and thus ultimately the CF and DND) as remaining at the forefront of technological innovations.

## 2 References

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## Appendix A

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### Choosing toothpaste

Imagine that you are almost out of toothpaste. You haven't gone a day without brushing your teeth for at least ten years. This situation is unacceptable. You need to make sure that you can get a good teeth brushing tomorrow morning, and tonight you may use up the remaining toothpaste. You're on a tight budget, but toothpaste is a must.

You go to the drug store and look for your regular brand of mint toothpaste. When you find it, you see that it costs \$3.50 per tube. You notice that there's a generic mint toothpaste that costs \$2.00 per tube. You've never tried the generic brand before.

What do you do?

- a) I purchase the generic toothpaste.
- b) I stick with my regular toothpaste

### Enjoying the weather

Imagine that it's a beautiful day outside. It's Saturday and you've had a very stressful work week. You are thrilled with the weather and that you have the entire day to relax and enjoy yourself in the outdoors. You decide to either go for a beautiful bicycle ride along the city's river bike-path where you can see the water and the skyline or else perhaps to go for a stroll to your local park for a calming two mile walk around the pond.

What do you do?

- a) I go for the bike ride.
- b) I go for a walk around the pond.



## Appendix B

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### Supervising a soldier who disobeys orders

Imagine that you are the commander of a unit on peacekeeping duty in a foreign country. There are two factions in this country, and you are trying to keep them from fighting. Your orders are to avoid fighting or siding with either faction.

One of your subordinates is somebody who has been good friend for many years. Recently, he has been getting sympathetic to one of the factions. One day, you find out that he has deployed soldiers into this faction's area for protection. This is directly contrary to your orders and to your mission. He needlessly put soldiers' lives at risk, in an immediate zone of danger. He probably felt strongly that he was saving civilians' lives, and was hoping that you wouldn't find out about it. In a case like this, military rules say that he should be relieved of command and sent for a court-martial. However, you could reprimand him privately instead.

What do you do?

- a) I reprimand him privately
- b) I relieve him of command and have him court-martialed.

### Handling wartime refugees

Imagine that you are the commander of a unit on peacekeeping duty in a foreign country. There are two factions in this country, and you are trying to keep them from fighting. Your orders are to avoid fighting or siding with either faction.

One of the factions starts to shell the town you are in. Thousands of bombs fall within 36 hours. Suddenly, hundreds of people from the other faction are outside your camp, trying to get away from the bombing. You contact headquarters for permission to let them in and the response is strict: don't let them in. The concern is that our country must maintain impartiality to be effective in keeping the peace: letting people into our camp makes it look as if we are supporting their faction. Also, if we let a few in, thousands more will try to get in as well. We don't have enough resources to be able to keep them all safe, well-fed, and free from diseases.

What do you do?

- a) I let them in.
- b) I turn them away.

## Appendix C

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### **Cheating in your relationship**

Imagine that you have been dating someone for several years, and you are really in love. However, a few months ago, you were having some problems in your relationship, and you also started feeling attracted to a friend from work. One thing led to another, and you ended up secretly cheating with this friend.

It was only one time, but now you feel horrible. You worry that if you don't confess what you did, your partner might find out about your secret some other way. Even if you manage to keep your secret, you think that the guilt and tension will eat you up inside. However, if you tell your partner the truth, you know that they will be very hurt and angry. You think that there's a very good chance that they will never forgive you, and that would mean the end of your relationship.

What do you do?

- a) I say nothing to my partner about the incident.
- b) I tell the truth about the incident to my partner.

### **Supporting your family**

Imagine that you are in a long-term relationship with a partner, and that you have a little baby together. Your partner is taking care of the baby and can't go back to work yet. You lost your job about 3 months ago and haven't had any luck finding another. Now you are behind on the rent. If you can't make a payment this month, your landlord will evict your family. You've already asked your parents for money, but they can't help you any more.

Today, your luck changes. You get an offer from a company that you learned about from an ad. You do some research on the Internet and you find out that the company makes many of its products in sweatshops in a foreign country, where the employees work for very low wages under miserable conditions. This makes you uncomfortable. You have always been strongly opposed to labor exploitation. In fact, during college you organized a week-long protest to support minimum wage for campus employees.

What do you do?

- a) I accept the job
- b) I refuse the job

## Appendix D

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### List of questionnaire items

#### Components of moral intensity (the rating scales ranged from 1 to 7)

- Most people would consider this option to be: *Appropriate* -- *Inappropriate*
- The possible harm resulting from this option would be: *Minor* -- *Severe*
- The chances of any negative consequences occurring as a result of this option are:
- *Not at all* -- *Very likely*

#### Measure of moral judgment (the rating scales ranged from *Not at all* = 1 to *Very much* = 7)

How well do the following characteristics describe this option?

- Just
- Fair
- Morally Right
- Acceptable to my family
- Culturally acceptable
- Traditionally acceptable
- Does not violate an unspoken promise
- Does not violate an unwritten contract

#### Measure of moral awareness (the rating scale ranged from *Not at all* = 1 to *Very much* = 7)

- To what extent does this decision involve ethics and morality?

**Moral principles items (the rating scales ranged from *Not at all* = 1 to *Very Likely* = 7)**

If you had to make this decision in real life, how likely would you be to follow each of the strategies listed below?

- Act out of care for others (Care)
- Do what a person of honor would do (Virtue)
- Consider whether the ends justify the means (Consequences)
- Protect your own self-interest (Self-interest)
- Follow society's laws (Rule)
- Stick to organizational or social regulations (Rule)
- Act with integrity (Virtue)
- Act in your best interest (Self-interest)
- Do the "right" thing (Virtue)
- Contemplate objectives to be achieved or avoided (Consequences)
- Weighs potential benefits against risks (Consequences)
- Let your roles or obligations determine a course of action (Rule)
- Ensure as little harm as possible is done to others (Care)
- Look out for yourself (Self-interest)
- Show concern for another person/creature (Care)

## Appendix E

### *Multilevel Models: Care-Based Principles (N = 384)*

Care	Model 1		Model 2		Model 3		Model 4	
	<i>Coef.</i>	<i>SE</i>	<i>Coef.</i>	<i>SE</i>	<i>Coef.</i>	<i>SE</i>	<i>Coef.</i>	<i>SE</i>
<b>Fixed Effects</b>								
Intercept	<b>4.84</b>	0.13	<b>3.27</b>	0.22	<b>3.05</b>	0.25	<b>2.59</b>	0.34
Military			<b>2.37</b>	0.22	<b>2.37</b>	0.22	<b>2.85</b>	0.34
Other			<b>2.35</b>	0.21	<b>2.35</b>	0.21	<b>2.86</b>	0.32
Age					<b>0.47</b>	0.22	<b>1.12</b>	0.42
Sex					0.02	0.21	0.40	0.42
Age X Military							-0.79	0.43
Age X Other							-0.66	0.41
Sex X Military							-0.30	0.43
Sex X Other							-0.47	0.40
<b>Random Effects</b>								
<i>Level-two variation:</i>								
Intercept variance	<b>0.52</b>	0.19	<b>2.68</b>	0.56	<b>2.46</b>	0.53	<b>2.32</b>	0.50
Military slope variance			<b>2.07</b>	0.55	<b>2.07</b>	0.55	<b>1.89</b>	0.52
Other slope variance			<b>1.78</b>	0.50	<b>1.78</b>	0.50	<b>1.61</b>	0.47
<i>Level-one variation:</i>								
Residual variance	<b>2.98</b>	0.24	<b>0.99</b>	0.10	<b>0.99</b>	0.10	<b>0.99</b>	0.10
Deviance	1554.94		1266.61		1262.18		1257.15	
Deviance Test ( <i>df</i> )			<b>288.33</b>	(7)	4.42	(2)	5.03	(4)

Note: Coefficients in boldface typeset are significant at  $p < .05$ .

Consequence	Model 1		Model 2		Model 3		Model 4	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
<b>Fixed Effects</b>								
Intercept	<b>5.12</b>	0.13	<b>4.33</b>	0.20	<b>4.36</b>	0.25	<b>4.43</b>	0.31
Military			<b>1.14</b>	0.18	<b>1.14</b>	0.18	<b>1.11</b>	0.29
Other			<b>1.25</b>	0.18	<b>1.25</b>	0.18	<b>1.15</b>	0.28
Age					0.10	0.25	-0.10	0.40
Sex					-0.17	0.25	-0.13	0.39
Age X Military							0.14	0.37
Age X Other							0.25	0.36
Sex X Military							-0.07	0.37
Sex X Other							-0.04	0.36
<b>Random Effects</b>								
<i>Level-two variation:</i>								
Intercept variance	<b>0.81</b>	0.20	<b>1.89</b>	0.44	<b>1.89</b>	0.44	<b>1.88</b>	0.44
Military slope variance			<b>1.02</b>	0.40	<b>1.02</b>	0.40	<b>1.02</b>	0.40
Other slope variance			<b>0.88</b>	0.37	<b>0.88</b>	0.37	<b>0.87</b>	0.37
<i>Level-one variation:</i>								
Residual variance	<b>1.74</b>	0.14	<b>1.13</b>	0.12	<b>1.13</b>	0.12	<b>1.13</b>	0.12
Deviance	1387.52		1278.91		1278.31		1277.68	
Deviance Test ( <i>df</i> )			<b>108.60</b> (7)		0.61 (2)		0.63 (4)	

Note: Coefficients in boldface typeset are significant at  $p < .05$ .

*Multilevel Models: Rule-Based Principles (N = 384)*

Rule	Model 1		Model 2		Model 3		Model 4	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
<b>Fixed Effects</b>								
Intercept	<b>3.93</b>	0.13	<b>3.09</b>	0.20	<b>2.90</b>	0.25	<b>2.72</b>	0.31
Military			<b>1.63</b>	0.23	<b>1.63</b>	0.23	<b>1.81</b>	0.37
Other			<b>0.90</b>	0.20	<b>0.90</b>	0.20	<b>1.20</b>	0.31
Age					0.27	0.26	0.39	0.39
Sex					0.15	0.25	0.41	0.39
Age X Military							0.03	0.47
Age X Other							-0.35	0.39
Sex X Military							-0.41	0.47
Sex X Other							-0.32	0.39
<b>Random Effects</b>								
<i>Level-two variation:</i>								
Intercept variance	<b>0.68</b>	0.19	<b>1.79</b>	0.45	<b>1.73</b>	0.44	<b>1.70</b>	0.43
Military slope variance			<b>2.06</b>	0.64	<b>2.06</b>	0.64	<b>2.02</b>	0.63
Other slope variance			<b>1.01</b>	0.46	<b>1.01</b>	0.46	<b>0.95</b>	0.45
<i>Level-one variation:</i>								
Residual variance	<b>2.32</b>	0.18	<b>1.43</b>	0.15	<b>1.43</b>	0.15	<b>1.43</b>	0.15
Deviance	1477.40		1352.95		1351.49		1347.57	
Deviance Test ( <i>df</i> )			<b>124.45</b> (7)		1.46 (2)		3.92 (4)	

Note: Coefficients in boldface typeset are significant at  $p < .05$ .

<i>Multilevel Models: Self-Interest-Based Principles (N = 384)</i>								
Self-Interest	Model 1		Model 2		Model 3		Model 4	
	<i>Coef.</i>	<i>SE</i>	<i>Coef.</i>	<i>SE</i>	<i>Coef.</i>	<i>SE</i>	<i>Coef.</i>	<i>SE</i>
<b>Fixed Effects</b>								
Intercept	<b>4.84</b>	0.14	<b>5.20</b>	1.82	<b>5.01</b>	0.25	<b>4.79</b>	0.28
Military			<b>-0.98</b>	0.22	<b>-0.98</b>	0.22	<b>-0.69</b>	0.34
Other			-0.08	0.18	-0.08	0.18	0.32	0.28
Age					0.17	0.28	0.46	0.36
Sex					0.24	0.28	0.45	0.36
Age X Military							-0.32	0.43
Age X Other							-0.55	0.35
Sex X Military							-0.33	0.43
Sex X Other							-0.34	0.35
<b>Random Effects</b>								
<i>Level-two variation:</i>								
Intercept variance	<b>0.95</b>	0.22	<b>1.53</b>	0.38	<b>1.45</b>	0.37	<b>1.42</b>	0.36
Military slope variance			<b>1.80</b>	0.54	<b>1.80</b>	0.54	<b>1.74</b>	0.53
Other slope variance			<b>0.90</b>	0.39	<b>0.90</b>	0.39	<b>0.79</b>	0.37
<i>Level-one variation:</i>								
Residual variance	<b>1.76</b>	0.14	<b>1.17</b>	0.12	<b>1.17</b>	0.12	<b>1.17</b>	0.12
Deviance	1399.65		1321.05		1319.91		1315.94	
Deviance Test ( <i>df</i> )			<b>78.60</b>	(7)	1.14	(2)	3.97	(4)

Note: Coefficients in boldface typeset are significant at  $p < .05$ .

*Multilevel Models: Virtue-Based Principles (N = 384)*

Virtue	Model 1		Model 2		Model 3		Model 4	
	<i>Coef.</i>	<i>SE</i>	<i>Coef.</i>	<i>SE</i>	<i>Coef.</i>	<i>SE</i>	<i>Coef.</i>	<i>SE</i>
Fixed Effects								
Intercept	<b>4.71</b>	0.14	<b>3.50</b>	0.22	<b>3.11</b>	0.26	<b>2.77</b>	0.33
Military			<b>2.06</b>	0.22	<b>2.06</b>	0.22	<b>2.47</b>	0.34
Other			<b>1.57</b>	0.22	<b>1.57</b>	0.22	<b>1.97</b>	0.35
Age					<b>0.58</b>	0.24	<b>1.08</b>	0.42
Sex					0.28	0.24	0.53	0.42
Age X Military							-0.63	0.43
Age X Other							-0.54	0.44
Sex X Military							-0.29	0.43
Sex X Other							-0.35	0.44
Random Effects								
<i>Level-two variation:</i>								
Intercept variance	<b>0.73</b>	0.21	<b>2.54</b>	0.56	<b>2.24</b>	0.51	<b>2.16</b>	0.50
Military slope variance			<b>1.82</b>	0.56	<b>1.82</b>	0.56	<b>1.70</b>	0.53
Other slope variance			<b>1.92</b>	0.57	<b>1.92</b>	0.57	<b>1.81</b>	0.55
<i>Level-one variation:</i>								
Residual variance	<b>2.64</b>	0.21	<b>1.24</b>	0.13	<b>1.24</b>	0.13	<b>1.24</b>	0.13
Deviance	1525.22		1335.72		1328.69		1325.85	
Deviance Test ( <i>df</i> )			<b>189.50</b> (7)		<b>7.04</b> (2)		2.83 (4)	

Note: Coefficients in boldface typeset are significant at  $p < .05$ .



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(U) We sought to answer 2 questions via this exploratory study. First we investigated whether individual differences in moral principle selection/preference exist in response to 6 moral dilemmas. Second, we asked, if individual differences do exist, to what extent they related to the demographic variables of sex and age? As part of a larger study on moral decision making, 64 participants read and reflected upon 6 ethical dilemmas, rated the extent to which 5 moral principles influenced their decisions regarding these dilemmas, and selected their preferred courses of action in response to each dilemma. Results of multilevel analyses suggest that there was significant within- and between-subjects variability in the extent to which the participants relied on various moral principles to resolve the dilemmas. That is, clear individual differences existed in the moral principles that the participants reported had guided their moral responses to the dilemmas. We also found that different moral principles were invoked to differing extents depending on the domain of the decision (non-moral, military moral and non-military moral). Of the individual difference variables assessed here, results revealed that age was a significant predictor of moral principle preference, with older adults being more likely to use virtue- and care-based principles than did younger adults. Sex was not significantly associated with moral principle selection. We discuss the potential implications of individual differences in the use of moral principles and offer directions for future research in this area.

(U) La présente étude exploratoire visait à répondre à deux questions. En premier lieu, nous avons voulu savoir s'il existait des différences d'un individu à l'autre dans les préférences ou le choix de principes moraux utilisés dans la prise de décision face à six dilemmes moraux. En second lieu, nous nous sommes demandé dans quelle mesure, lorsque de telles différences existent entre les individus, celles-ci sont-elles liées aux variables démographiques que sont l'âge et le sexe. Dans le cadre d'une étude plus vaste portant sur le processus de prise de décision morale, 64 participants ont lu six dilemmes éthiques afin d'y réfléchir et d'évaluer dans quelle mesure cinq principes moraux influençaient leur décision face à ces dilemmes. Ils ont ensuite indiqué quelles étaient leurs lignes de conduite de prédilection face à chacun des dilemmes. Les résultats des analyses à niveaux multiples suggèrent qu'il existait des variations chez un même sujet et entre les sujets en ce qui a trait à l'importance qu'accordaient les participants à la portée des différents principes moraux pour résoudre ces dilemmes. Ce qui signifie qu'il existait des différences claires d'un individu à l'autre dans les principes moraux que les participants disaient avoir utilisés pour guider leur réponse morale à chacun des dilemmes. Nous avons également découvert que différents principes moraux ont été évoqués dans différentes mesures selon le domaine de décision (non lié à la morale, morale dans un contexte militaire et morale dans un contexte non militaire). Parmi les différences entre les individus évaluées ici, les résultats révèlent que l'âge était une importante variable explicative de la préférence au niveau des valeurs morales, les adultes plus âgés étant plus susceptibles de faire appel à des principes basés sur la vertu ou sur la sollicitude que ne le sont les adultes plus jeunes. Le sexe n'était pas associé de façon significative au choix du principe moral utilisé. Nous discuterons des implications potentielles de ces différences individuelles dans l'utilisation de principes moraux et nous proposerons des directions pour les recherches à venir dans ce domaine.

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(U) ethical dilemma, moral principles, moral decision making, individual differences

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